Wildland Urban Interface Code (WUI) Guide:
Building Construction Requirements

INTRODUCTION

The County's fire and building codes have been strengthened in successive code adoption cycles with the primary goals of protecting the safety of our citizens and enhancing a home's ability to survive a wildfire.

Wildland firefighting by itself is very challenging and adding structures and other improvements into the equation greatly increases the complexity. Over the last several decades an expansion of communities, homes and other improvements into wildland areas has created a significant challenge for the fire service agencies responsible for providing fire protection in those areas.

Winds during wildfires carry huge amounts of burning embers, swirling into cracks and crevices, igniting anything that is easily combustible. Eaves tend to capture blowing embers because they are perpendicular to the wall. Eave vents, which are designed to move air in and out of the attic, give opportunity for embers to ignite soffit material or enter attic areas. Once a fire starts in an attic, it goes undetected for some time and is very difficult to stop even under ideal conditions.

In 2013 Washoe County adopted the 2012 International Wildland Urban Interface Code. The purpose of this guide is to provide an overview of the building construction requirements of the new Wildland Urban Interface (WUI) Code requirements, summarize the County's interpretations and approvals, identify changes over the previous edition, and to provide references for those seeking further information.

WUI CODE REQUIREMENTS

Before you start designing your new home, you need to determine your ignition resistant construction requirements in four easy steps.

First Step: The first step is to determine the Fire Hazard Severity of your building site to determine if the site is in Low, Moderate, High or Extreme Hazard Area. Washoe County has a fire hazard map that can be found at https://gis.washoecounty.us/wrms/firehazard to help you determine the hazard severity. For sites that have multiple hazards, the most sever will apply. Note: The Hazard Severity can be reduced by implementing an approved vegetation management plan. (See Additional Plan Requirements.)

Second Step: Next you will need to determine if you have a conforming water supply and a defensible space. Check with the local Fire Marshal if you have questions about nonconforming or conforming water supply and defensible space.

Third Step: Then you can take the information from the steps above and apply it to the following table to determine the required ignition-resistant construction. Depending on nonconforming or conforming water supply and defensible space you may be able to modify your ignition resistant construction requirements. Check with the local Fire Marshal if you have questions about nonconforming or conforming water supply and defensible space

TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION						
DEFENSIBLE SPACE (Chapter 6)	Fire Hazard Severity (Chapter 4)					
	Moderate Hazard		High Hazard		Extreme Hazard	
	Water Supply		Water Supply		Water Supply	
	Conforming	Nonconforming	Conforming	Nonconforming	Conforming	Nonconforming
Nonconforming	IR 2	IR 1	IR 1	IR 1 NC	IR 1 NC	Not Permitted
Conforming	IR 3	IR 2	IR 2	IR 1	IR 1	IR 1 NC
1.5 Conforming	Not Required	IR 3	IR 3	IR 2	IR 2	IR 1

*Note: IR 1 NC shall have exterior walls of 1 hour fire resistive construction **and** exterior siding material shall be noncombustible.*

Fourth Step: Now that you know your ignition-resistant construction you can use Chapter 5 of the WUI Code and the following guide information to help you meet those requirements.

WUI BUILDING CONSTRUCTION REQUIREMENTS

Roofs: Roofs assemblies shall be the appropriate class (A, B, or C) for the ignition construction class. When provided, valley flashing shall be not less than No. 26 galvanized sheet gage. Any space between the roof covering and roof decking or at the eave end shall be fire stopped to prevent the entry of flame or embers.

Roof Gutters: Roof gutters and downspouts shall be constructed of noncombustible materials. Gutters shall be provided with an approved means to prevent the accumulation of leaves and debris.

Eaves & Fascia: Eaves, fascia, and soffits shall be protected on the exposed underside by approved 1 hour fire resistant construction (FRC), ignition-resistant (IR) material, 2x lumber, fire retardant treated wood labeled for exterior use. No exposed tails unless heavy timber (6x8). Other architectural trim boards are exempt.

Vents: Each vent shall not exceed 144 square inches in area and shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed ¼ inch or shall be designed and approved to prevent flame or ember penetration into the structure. Vents in soffits, eaves, or overhangs areas shall be an approved venting device only. Attic ventilation vents shall be located at least 10 feet from lot lines.

Exterior Walls: Exterior walls surfaces shall be either an approved 1 hour fire resistant construction (FRC), approved noncombustible material, heavy timber or log wall construction, fire retardant treated wood labeled for exterior use or ignition-resistant (IR) material. Architectural trim boards are exempt.

- Approved 1-hour FRC shall mean any 1-hour fire rated assembly or any exterior siding when installed over one layer of 5/8" Type X exterior gypsum sheathing that is tightly butted or taped and mudded.

- Heavy timber construction (IBC 602.4) has exterior walls that are of noncombustible materials, 8x8 columns, 6x10 floor framing, 6x8 roof framing, and 3x T&G decking.

- Other examples of acceptable wall materials are stucco, masonry, cement-fiber board, and other materials meeting the testing requirements for noncombustible (ASTM E136) or ignition-resistant (ASTM E 84 or UL 723) materials with a minimum Class A flame spread rating.

- IR 1 NC shall have exterior walls of 1 hour fire resistive construction and exterior siding material shall be noncombustible.

Windows (Glazing): Exterior windows, window walls, glazed doors, glazed opening within exterior doors, and skylights shall be either tempered glass, insulating (dual or tripled glazed) glass units, glass block, or have a minimum 20 minute fire resistive rating. It is recommended that in addition vinyl windows shall have a label certified meeting ANSI/AAMA/NWWDA 101/I.S.2-97 structural requirements. Otherwise, window frames, sashes, and screens have no WUI requirements.

Exterior Doors: Exterior doors shall be either approved noncombustible construction, minimum 1 ¾" solid core, or have a fire protection rating of not less than 20 minutes. Door frames have no WUI requirements. Vehicle access doors are exempt. Door thresholds, frames, screens, and weather stripping have no WUI requirements.

Patio Covers, Trellis' & Carports: Patio Covers, trellis', carports and other roof projections and attachments shall be an approved 1 hour fire resistant construction (FRC), approved noncombustible material, heavy timber construction, fire retardant treated wood labeled for exterior use or ignition-resistant (IR) material.

- Heavy timber construction for decks, patio covers and similar structures: Minimum 6x6 columns, 4x8 floor joists, 4x10 or 6x8 beams, 3x ledgers and 2x decking.

Decks & Balconies: Decks and Balconies shall be an approved 1 hour fire resistant construction (FRC), approved noncombustible material, heavy timber construction, fire retardant treated wood labeled for exterior use or ignition-resistant (IR) material. Underfloor areas shall be enclosed within 6" of the ground when any portion projects over a descending slope greater than 10%, unless the under floor area is free from storage or vegetation.

- Heavy timber construction for decks, patio covers and similar structures: Minimum 6x6 columns, 4x8 floor joists, 4x10 or 6x8 beams, 3x ledgers and 2x decking.

Only decking surfaces of decks with defensible space and under floor area free from storage and vegetation shall comply with the WUI code material requirements or the third party approved decking material with Class B listing as listed at the Office of the California State Fire Marshal, http://osfm.fire.ca.gov/licensinglistings/licenselisting_bml_searchcotest.php.

There are no fire resistive requirements for handrails, guards, and balusters.

Fences and Other Attachments: Any portion of a fence or other structure within five feet of the building shall be constructed of noncombustible material or material that meets the same fire resistive standards as the exterior walls.

Fire Sprinklers: An approved automatic fire sprinkler system shall be installed in all occupancies in new buildings located more than one thousand feet (1,000') from an approved water supply as measured along an approved fire access road. The installation of the automatic sprinkler system shall be in accordance with nationally recognized standards.

ADDITIONAL PLAN REQUIREMENTS

Vegetation Management Plans: Fire Hazard Severity can be reduced by implementing an approved Vegetation Management Plan. Vegetation management plans shall be provided describing all actions that will be taken to prevent a fire from being carried toward or away from the building. A vegetation management plan shall include at least the following information:

1. A copy of the site defensible space plan.

2. Methods and timetables for controlling, changing or modifying areas on the property. Elements of the plan shall include removal of slash, snags, vegetation that may grow into overhead electrical lines, other ground fuels, ladder fuels and dead trees, and the thinning of live trees.
3. A plan for maintaining the proposed fuel-reduction measures.

Defensible Space Plans: Where required, defensible space plans must be submitted to the code official for review and approval as part of the plans required for a permit. A defensible space plan shall include at least the following information:

1. Property boundaries.
2. Current and proposed structures on the property.
3. Trees and vegetation taller than 3 feet in height.
4. Individual plant or brush fields 20 square feet or larger in area.
5. Tree drip lines.
6. Roads and driveways in abutting the property.

REFERENCE DOCUMENTS

Reference documents are for informational purposes only when used by the code official.

1. Wildfire Threat Reduction Recommendations for Lake Tahoe Basin Homeowners, published by the University of Nevada Cooperative Extension.
2. Wildfire Threat Reduction Recommendations for Sierra Front Homeowners, published by the University of Nevada Cooperative Extension.
3. Choosing the Right Plants, published by the University of Nevada Cooperative Extension.
4. Living with Fire, published by the University of Nevada Cooperative Extension.
5. Fire Adapted Communities: The Next Step in Wildland Preparedness – Washoe County version, published by the University of Nevada Cooperative Extension.

IGNITION-RESISTANT CONSTRUCTION

	Class 1 (IR1)	Class 2 (IR2)	Class 3 (IR3)
Roofs	• Class A - Roof edge/gaps fire stopped - 26 gage valley flashing[a]	• Class B - Roof edge/gaps fire stopped - 26 gage valley flashing[a]	• Class C - Roof edge/gaps fire stopped - 26 gage valley flashing[a]
Eaves	• IR material • 1-hour FRC • 2” nom. dimension lumber • Or treated materials	• Enclosed with solid material (3/4” min.) • No exposed tails unless heavy timber	
Fascia	• IR material • 1-hour FRC • 2” nom. dimension lumber	• Enclosed with solid material (3/4” min.)	
Vents[b,c]	• <144 square inches • <1/4 in. noncombustible corrosion-resistant mesh • Or approved device[c]	• <144 square inches • <1/4 in. noncombustible corrosion-resistant mesh • Or approved device[c]	Key IR = Ignition-Resistant FRC = Fire Resistant Rated Construction
Exteriors Walls	• Approved 1-hour FRC[d] • Approved noncombustible materials • Heavy timber or log wall • Fire retardant treated wood labeled for exterior use • IR material	• Approved 1-hour FRC[d] • Approved noncombustible materials • Heavy timber or log wall • Fire retardant treated wood labeled for exterior use • IR material	
Windows	• Tempered glass • Multilayered glazed panels • Glass block • Min. 20 minute rating	• Tempered glass • Multilayered glazed pnales • Glass block • Min. 20 minute rating	
Doors[e]	• Approved noncombustible construction • Solid core (1 3/4” min.) • Min. 20 minute rating	• Approved noncombustible construction • Solid core (1 3/4” min.) • Min. 20 minute rating	
Appendages (i.e. Decks)[f]	• 1-hour FRC • Heavy timber • Approved noncombustible materials • Fire retardant treated wood labeled for exterior use • IR material	• 1-hour FRC • Heavy timber • Approved noncombustible materials • Fire retardant treated wood labeled for exterior use • IR material	
Unclosed Underfloor	• Enclosed to ground • 1-hour FRC • Heavy timber • Fire retardant treated wood labeled for exterior use	• Enclosed to ground • 1-hour FRC • Heavy timber • Fire retardant treated wood labeled for exterior use	• Enclosed to ground • 1-hour FRC • Heavy timber
Gutters & Downspouts	• Noncombustible material • Prevent accumulation of leaves and debris	• Noncombustible material • Prevent accumulation of leaves and debris	• Noncombustible material • Prevent accumulation of leaves and debris

a. When provided.
b. Gable end, soffit, eave, and dormer vents shall be located at least 10 feet (3048 mm) from lot lines.
c. Attic ventilation openings at soffits, eaves, or overhang areas must be approved devices only.
d. On the exterior side.
e. Exception: Vehicle access door.
f. See WUI Code, amendments, and guide for additional restrictions or exceptions.